

### REMARKS

In reply to the Office Action, Applicant submits the following remarks.

#### The Claims

Applicant has amended independent claims 21 and 25. Applicant has clarified that the treatment being assessed in claims 21 and 25 is a treatment of a membrane fluidity-related disorder. This feature was previously recited in dependent claim 27. Support for this amendment can be found at, e.g., page 4, lines 14-16; page 7, lines 16-20; original claims 21 and 26.

#### Claim 21:

Application has made several other amendments to claim 21. For clarity, Applicant reversed the first two steps of claim 21. The first step of claim 1 now involves administering a neurological or psychiatric treatment. Applicant has amended this step to clarify that this treatment is administered to treat the membrane-fluidity disorder recited in the claim. The second step of claim 1 now involves performing the calculation. Applicant has amended this step to state that the relaxation parameter involved in this calculation is T2. Support for this amendment can be found at, e.g., page 4, lines 8-13; page 5, lines 1-9; page 6, lines 7-11; page 11, lines 4-21; page 12, line 11 to page 13, line 20; Figs. 1-3; original claims 4, 15, 17, and 24.

Applicant has added an additional step to claim 21: "administering to the subject a challenge to alter a physical or chemical property of cell membranes in the brain of the subject, wherein the challenge is an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound." Support for this amendment can be found at, e.g., page 4, lines 18-20; page 8, lines 27-30. Applicant has amended the post-challenge calculation step in the same manner as the first calculation step to recite calculating a second value of T2 (see above for support).

Applicant has also amended the final step of claim 21, which previously involved detecting a difference between the two relaxation parameters. Applicant has clarified that this

step involves detecting any decrease from the first value of T2 to the second value of T2. Applicant has also amended the claim to state that the magnitude of this difference indicates the effectiveness of the treatment. As Applicant describes in the application, a decrease in T2 in response to administration of a challenge is useful for assessing the effectiveness of a treatment (see, e.g., page 11, line 29, to page 13, line 2).

Claim 25:

Applicant has made corresponding and additional amendments to claim 25, in addition to amending claim 25 to recite a membrane-fluidity disorder. Claim 25 is similar to claim 21 but also involves a pre-treatment analysis. As done in claim 21, Applicant has amended claim 25 to clarify that the proton relaxation measurement is a T2 measurement (see above for support). Applicant has amended the phrase “that alters” in the second and seventh steps of claim 25 to “to alter” for clarity. As in claim 21, Applicant now specifies that the pre-treatment and post-treatment challenges are “an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound” (see above for support).

Applicant also now states that the previously recited “difference in T2 between the first pre-treatment proton relaxation measurement and the second pre-treatment T2 proton relaxation measurement” for each of the pre-treatment and post-treatment challenge results is, in the claim as amended, a “decrease in T2 from the first pre-treatment T2 measurement to the second pre-treatment T2 measurement” (see above for support). Applicant also now recites in the claim that the “decrease in T2 indicates a sensitivity of the cell membranes in the brain of the subject to change by the pre-treatment challenge,” which is described in the application at e.g., page 4, lines 8-13; page 11, line 29, to page 13, line 2; Fig. 1.

In the last step of claim 25, Applicant has amended the previously recited “difference between the pre-treatment challenge result and the post treatment challenge result” a “decrease in magnitude from the pre-treatment challenge result to the post-treatment challenge result” since, as the claim now recites, this “indicates that the treatment has an effect on the membrane fluidity in the subject.” Support can be found at, e.g., page 11, line 29, to page 13, line 2.

Other claims:

Claim 32 is amended to delete "repetition times (TR), or inversion times (TI)."

Claim 33 is amended to change "16" images to "2" images.

Claim 38 is amended to fix the spelling of "calculated."

Canceled claims:

Applicant has now canceled claims 24, 27, and 31.

New claims:

Applicant has added new claims 39-41. Claim 39 is the same as claim 22, except that claim 39 is dependent on claim 25. Claim 40 is the same as claim 28, except that claim 40 is dependent on claim 25. Claim 41 is the same as claim 32, except that claim 41 is dependent on claim 25.

Applicant's amendments and new claims add no new matter.

35 USC § 102

Fishman:

Examiner rejected claims 21-24, 27-28, and 30-38 under 35 U.S.C. 102(b) as anticipated by Fishman, U.S. Patent No. 5,357,959. Examiner stated that Fishman discloses generating quantitative information for relaxation parameters.

Applicant has amended claim 21 to recite "a membrane fluidity-related disorder." Fishman does not disclose a membrane-fluidity-related disorder. Applicant has also amended claim 21 to recite administering "an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound." Fishman does not disclose administering an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound. Applicant has also amended claim 21 to recite "detecting any decrease from the first value of T2 to the second value of T2, wherein the

magnitude of the decrease indicates the effectiveness of the treatment on the subject. Fishman does not disclose detecting a decrease from the first value of T2 to the second value of T2, or that such a difference would indicate the effectiveness of a treatment.

Consequently, as amended, claim 21 is not anticipated by Fishman. Since claims 22-23, 28, and 32-37 are dependent on claim 21, these claims are also not anticipated by Fishman. Claims 24, 27 and 31 have been canceled. Claim 38 is dependent on claim 25. Since Examiner has not rejected claim 25 as anticipated by Fishman, claim 38 is not anticipated by Fishman. Applicant explains below that claim 25 as amended is also not obviousness in view of Fishman.

Carter:

Examiner rejected claims 21-23, 27, and 31-38 as being anticipated by Carter, U.S. Patent No. 5,258,369. Examiner stated that Carter inherently meets the claimed requirement of calculating relaxation parameters.

Applicant has amended claim 21 to recite "a membrane fluidity-related disorder." Carter does not disclose a membrane-fluidity-related disorder. Applicant has also amended claim 21 to recite administering "an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound." Carter does not disclose administering an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound. Applicant has also amended claim 21 to recite "detecting any decrease from the first value of T2 to the second value of T2, wherein the magnitude of the decrease indicates that the effectiveness of the treatment on the subject." Carter does not disclose detecting a decrease from the first value of T2 to the second value of T2, or that such a difference would indicate the effectiveness of a treatment.

Consequently, as amended, claim 21 is not anticipated by Carter. Since claims 22-23, 28, and 32-37 are dependent on claim 21, these claims are also not anticipated by Fishman. Claims 27 and 31 have been canceled. Claim 38 is dependent on claim 25. Since Examiner has not rejected claim 25 as anticipated by Carter, claim 38 is not anticipated by Carter. In any event, Applicant explains below that claim 25 as amended is also not obviousness in view of Fishman below and, for the same reasons, claim 25 as amended is not anticipated by Carter.

35 U.S.C. § 103

Examiner rejected claims 21-25, 27-28, and 30-37 as unpatentable over Fishman. Examiner stated that it would have been obvious to perform the claimed calculation and that Fishman inherently uses a neurological treatment. Examiner also maintained that the “pre-treatment challenge” and “post-treatment challenge” could encompass normal physiological activity.

Applicant has amended claims 21 and 25 to recite, “A method of assessing the effectiveness of a neurological or psychiatric treatment of a membrane fluidity-related disorder.” Fishman does not disclose or suggest a method of assessing the effectiveness of a neurological or psychiatric treatment of a membrane-fluidity-related disorder.

Applicant has also amended claims 21 and 25 to state that the challenges being administered are “an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound.” This obviates Examiner’s contention that the challenges as previously claimed could encompass normal physiological activity. Moreover, Fishman does not disclose or suggest administering an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound. As Examiner recognizes, Fishman discloses use of xenon.

Applicant has amended claim 21 to recite “detecting any decrease from the first value of T2 to the second value of T2, wherein the magnitude of the decrease indicates that the effectiveness of the treatment on the subject.” Applicant has also amended claim 25 to recite “a decrease in magnitude from the pre-treatment challenge result to the post-treatment challenge result” and that this “indicates that the treatment has an effect on membrane fluidity in the subject.” Fishman does not disclose or suggest performing these steps recited in claim 21 and claim 25 as amended.

Consequently, claims 21 and 25 are not obvious in view of Fishman. Since claims 22-23, 28, 30, and 32-37 are dependent on claim 21, these claims are also not obvious in view of Fishman. Claims 24, 27 and 31 have been canceled.

### 35 U.S.C. § 101

Examiner rejected claims 21-25 and 27-38 under 35 U.S.C. 101. Examiner stated that these claims were viewed as pure mathematical algorithms that do not produce concrete, tangible and useful results.

Claims 21 and 25 as amended are directed to statutory subject matter. Claims 21 and 25 are both directed to "A method of assessing the effectiveness of a neurological or psychiatric treatment of a membrane fluidity-related disorder." A method of assessing the effectiveness of a treatment is patentable subject matter. The application discloses that a membrane-fluidity related disorder is associated with a decrease in T2 in response to administration of a challenge. Indeed, Applicant provided actual examples demonstrating these effects, see page 11, line 28 to page 13, line 20. Furthermore, Applicant has established that this decrease in T2 is of clinical significance, see page 13, lines 18-20. Claims 21 and 25 both recite this decrease in T2 and use this decrease in T2 for a clinical purpose, assessing the effectiveness of a membrane fluidity-related disorder.

Examiner's previous contention that "the recited effects in claims 21 or 25 is merely an indication of a difference between the calculated measures" is not correct in view of the claims as amended. Claim 21 recites that the final calculated measure "indicates the effectiveness of the treatment on the subject," and claim 25 recites that the final calculated measure "indicates that the treatment has an effect on the membrane fluidity in the subject." A calculated result that indicates the effect of a treatment is patentable subject matter. *See* MPEP 2106. This result has "real world" value and has practical application in assessing the effectiveness of treatments of membrane fluidity-related disorders.

Since claims 21 and 25 are directed to patentable subject matter, the rejected claims dependent on claims 21 and 25 are also directed to patentable subject matter.

### 35 U.S.C. § 112

Examiner rejected claims 21-25 and 27-38 as failing to comply with the enablement requirement. Examiner stated that "one skilled artisan is left with no guidance as to the

determination of the type of calculations required to practice the claims.” Examiner has also stated that “one skilled in the art must perform undue experimentation to make and use the claimed invention.”

The claims are not mathematically complex and can be satisfied by performing subtraction. Applicant has amended the claims to make clear that a decrease in T2 is the primary value of interest. Claim 21 involves calculating a decrease in T2, and claim 25 involves a comparison of the magnitude of the decrease in T2 from the pre-treatment state to the post-treatment state. It is well within the skill of a person in this art to calculate a decrease in T2 by, e.g., subtraction of T2 values.

Applicant has also described in detail how to practice the claims, see page 7, line 15 to page 11, line 25. Furthermore, Applicant provided two examples of practicing the claims, including graphical data (Figs. 1-3) for these examples, and disclosed that the approach used in the examples is useful for following the effect of treatment. See page 11, line 28 to page 13, line 20. No undue experimentation is needed to follow Applicant's detailed description and actual examples.

Examiner's statement that “there is no correlation between the measurements and the administering of a neurological or psychiatric treatment to a subject” is contrary to Applicant's teaching in the specification. This suggests that the Examiner may be skeptical that Applicant's claimed invention will work. Such skepticism is a factor demonstrating the nonobviousness of Applicant's invention, but it is not a proper rejection for non-enablement. Applicant has taught how to practice the claims, including with specific examples, and Applicant is entitled to claims based on this teaching. For example, Applicant has taught that T2 decreases in response to certain challenges (i.e., an omega-3 fatty acid, S-adenosylmethionine, a statin, or a cytidine compound) correlate with membrane-fluidity problems. Practicing these claims is no more complex than taking differences in T2 measurements, a process that is fully disclosed in the specification.

Consequently, the claims are enabled.

Applicant : Perry F. Renshaw et al.  
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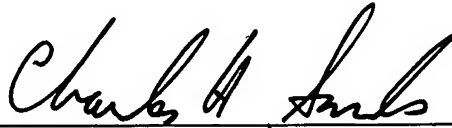
Attorney's Docket No.: 04843-033001 / MCL 1779.1

Applicant submits that all claims are in condition for allowance. Enclosed is a  
Enter \$ amount check for the Petition for Extension of Time fee. Please apply any other charges  
or credits to deposit account 06-1050.

Respectfully submitted,

Date: \_\_\_\_\_

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